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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/777,675

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EXAMINER

LI, SHI K

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/777,675	Applicant(s) KATAGIRI ET AL.	
	Examiner Shi K. Li	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites the limitation “an amount of residual dispersion at the second optical repeater node is smaller than an amount of residual dispersion at each of the plurality of first optical repeater nodes” in lines 29-30 of the claim. However, instant specification does not describe the limitation in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 7 recites the limitation “an amount of residual dispersion at the second optical repeater node is smaller than an amount of residual dispersion at each of the plurality of first optical repeater nodes” in lines 28-29 of the claim. However, instant specification does not describe the limitation in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-2, 4, 7-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tager et al. (U.S. Patent Application Pub. 2004/0208608 A1) in view of Zhou (U.S. Patent Application Pub. 2003/0219198 A1).

Regarding claims 1 and 7, Tager et al. discloses in FIG. 15 an optical communication system. Tager et al. teaches in FIG. 6 overcompensation at line sites 118 to obtain a negative dispersion proportional to the distance from the transmitting site 115 to each line sites. Tager et al. teaches in FIG. 6 that the switching sites 117 maintain a positive residual dispersion that is proportional to the distance from the transmitting site 115 to each switching site 117. Tager et al. teaches in FIG. 6 that the residual dispersion at the receiving site is D_{reach} . Tager et al. teaches in paragraph [0040] that the positive residual dispersion at the end of each section is

$$D_{sec} = D_{reach} * \frac{L_{sec}}{L_{reach}}.$$

That is, the positive dispersion is determined by multiplying a predetermined dispersion value D_{reach}/L_{reach} by the distance between the transmitting site and the switching site L_{sec} . Tager et al. teaches in FIG. 6 that the residual dispersion at 117 is smaller than the residual dispersion at the line sites 118. The differences between Tager et al. and the claimed invention are: (a) by comparing FIG. 6 of Tager et al. and FIG. 3 of instant specification, Tager et al. indicates a negative dispersion at the transmitting site 115 and (b) Tager et al. does not teach the bit rates of the wavelength channels.

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The initial negative dispersion is introduced for allowing a longer distance between the first line site and the transmitting site. One of ordinary skill in the art would have understood that if the distance between the first line site and the transmitting site is within the dispersion limit, the initial negative dispersion can be removed. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to remove the initial negative dispersion in the optical communication system of Tager et al. when the distance between the transmitting site and the first line site is not too long such that the dispersion introduced by the transmission line is within the dispersion limit.

The modified optical communication system of Tager et al. still fails to teach the bit rates of the wavelength channels. First, it is well known in the art that the bit rate for each wavelength channel is independent of the other wavelength channels. Second, bit rates of 10 Gbps and 40 Gbps are well known in the art. For example, Zhou teaches paragraph [0008] high speed TDM signals of 10 Gb/s, 40 Gb/s and more. Zhou teaches in FIG. 3 and FIG. 5A that transmission of traffic can be made between adjacent nodes. For example, FIG. 3 shows traffic 90 between nodes 10 and 20, traffic 120 between nodes 20 and 30; FIG. 5A shows traffic 420 between nodes 400-1 and 400-2. One of ordinary skill in the art would have been motivated to combine the teaching of Zhou with the optical communication system of Tager et al. to transmit optical signals of 10 Gbps and 40 Gbps based on traffic need. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit optical signals of 10 Gbps and 40 Gbps, as taught by Zhou, in the optical communication system of Tager et al. due to different traffic needs among the network nodes. The difference in bit rates for different

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wavelength channels may also due to the fact that certain facilities have been upgraded while the others are still operating at slower bit rates.

Claim 1 recites the limitation “at least one of the transmitting end station and the second optical repeater node sends 40 Gbps optical signal only between the transmitting end station and the second optical repeater node, between adjacent second optical repeater nodes, or between the second optical repeater node and a receiving end station.” Claim 7 recites similar limitation. However, using an optical communication system to send an optical signal of any particular data rate is considered as an intended use and does not carry any patentability weight.

Regarding claims 2, 4, 8 and 10, Tager et al. teaches in paragraph [0029] and [0031] switching node and add/drop node.

5. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tager et al. and Zhou as applied to claims 1-2, 4, 7-8 and 10 above, and further in view of Tsuritani et al. (U.S. Patent 6,768,872 B1).

Tager et al. and Zhou have been discussed above in regard to claims 1-2, 4, 7-8 and 10. The difference between Tager et al. and Zhou and the claimed invention is that Tager et al. and Zhou do not teach compensating gain deviation. Tsuritani et al. teaches in col. 3, lines 15-21 to equalize optical power and in col. 2, lines 19-21 to compensating dispersion slope so that it becomes practically zero. One of ordinary skill in the art would have been motivated to combine the teaching of Tsuritani et al. with the modified optical communication system of Tager et al. and Zhou because these compensation ensures that all channels will have the same quality and allows the communication system to reach longer distance. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to compensate for gain

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deviation and dispersion slope, as taught by Tsuritani et al., in the modified optical communication system of Tager et al. and Zhou because these compensation ensures that all channels will have the same quality and allows the communication system to reach longer distance.

Response to Arguments

6. Applicant's arguments filed 21 September 2009 have been fully considered but they are not persuasive.

The Applicant argues “Tagar et al. and Zhou, alone or in combination, do not discuss or suggest: ‘an amount of residual dispersion at the second optical repeater node is smaller than an amount of residual dispersion at each of the plurality of first optical repeater nodes’, as recited in amended claims 1 and 7.” The Examiner disagrees. Tager et al. suggests in FIG. 6 that the residual dispersion at 117 (second optical repeater node) is smaller than the residual dispersion at the line sites 118 (first optical repeater nodes).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (6:30 a.m. - 4:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl
16 December 2009

/Shi K. Li/
Primary Examiner, Art Unit 2613